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Experts, Black Boxes and Artifacts: New Categories in the Social History of Electric Media

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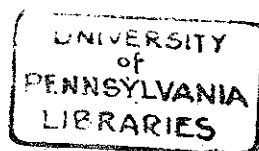
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11 Experts, Black Boxes, and Artifacts: New Allegories for the History of Electric Media

CAROLYN MARVIN

Let me start by wondering aloud whether the impulse to prospect for Kuhnian paradigms in communication research isn't more than a little counterintuitive. By virtue of our subject matter, we are not a discipline but a field, one with many pastures to graze. To search for paradigms is not inevitably to recommend them, but a request to portray one's work as paradigm-oriented exerts a certain pressure in the direction of finding them. Periodic quests for the display of intellectual *uniformity*, at least as apt a term as *paradigm*, are both institutionally and theoretically driven, as John Durham Peters (1986) has recently argued. We cannot avoid institutional pressures toward the elimination of intellectual variety, and perhaps vitality, but orthodoxy is no index of intellectual progress. Nor is it clear why we should aspire to achieve a relatively small number of paradigmatic conceptions about what communication is, what intellectual problems are worth attending to, or how such investigations should be executed. If categorization is required, our frameworks ought first to be understood as orthodoxies, a fairer and more self-critical assessment, or *allegories*, to use James Clifford and George E. Marcus's (1986) term, instead of as "paradigms," with its perhaps more wishful than descriptive connotation of decisive battles over fundamental propositions in a march toward unitary truth.

My concern about the construction of an illusory and possibly undesirable disciplinary solidity reflects the difficulty of placing my own work in a coherent tradition of communication history. By the measure of an absence of any division for it in an umbrella professional organization like the International Communications Association, historical discourse in the field remains comparatively marginal, though it was not always so. Interesting work and shifting orthodoxies in other intellectual domains will change this sooner or later. Meanwhile, exemplary historical work has been done by Erik Barnouw, James W. Carey, Richard Collins, James Curran, Susan Douglas, Garth Jowett, Mary Mander, John Nerone,

David Nord, Dan Schiller, and Michael Schudson, to offer a by no means exhaustive list of historians in the field. But it is difficult for me, at least, to locate these authors coherently with respect to one or a few governing paradigms. While my own work has links to traditions outside as well as inside communications (defined as that collection of people who belong to the ICA, SCA, AEJ, or IAMCR, and generally hold faculty appointments in schools and departments specifically labeled by the term *communication*), I would hesitate to label myself as, say, a cultural historian who only happens to be in a school of communication. Communication is not only a field, but a good idea for a field. Some of the best research about topics in communication history, however, is thriving outside it. The remedy, I think, is to expand rather than narrow our horizons about what communication is and can be to bring other interesting conversations also within our hearing.

One productive approach to the mediated communication of historical groups, which is my subject, conceives culture as an arena in which codes, or rules for messages, are contested. Among interpreters of cultural codes, a few have achieved ionic status: Michel Foucault, Pierre Bourdieu, Mary Douglas, Victor Turner, Jacques Derrida, Emmanuel Le Roy Ladurie, Clifford Geertz, Marshall Sahlins, Natalie Davis, and Lawrence Stone, among others. All have disavowed traditional disciplinary barriers in order to enter into creative exchanges among historians, anthropologists, sociologists, and literary critics drawing freely on one another's theories and techniques for reading cultural structure in everyday lives, past and present. What they have in common is less a particular methodology or subject matter, though contested codes are a kind of converging subject matter in cultural studies of all kinds, than a reevaluation of former political and epistemological certainties.

My admiration for this robust scholarly eclecticism orients me toward cultural studies, especially cultural history informed by sociological and anthropological perspectives, and furnishes the intellectual atmosphere (in contrast to paradigm, which implies a more precise relationship) in which the project I am trying to account for exists. That project attempts descriptively and theoretically to characterize comments from a variety of sources reprinted in engineering journals in the late nineteenth century. These comments concern the introduction of electric media, especially as these illuminate class conflicts and conflicts between experts and publics acted out in new communicative modes. The result, I hope, is a serious attempt to rethink several long-standing assumptions in communications history on the basis of material about a period that has been more than neglected; it has been invisible.

Artifactual Categories in Communications History

The assumptions I mean have broadly defined the territory of nineteenth- and twentieth-century communications history as artifacts—books, newspapers, radio,

television—especially those that have the capacity to reach large audiences with the same message. Mass media artifacts are undeniably a topic of communication history, though it could be argued that a preoccupation with them has inhibited the development within the field of interesting ideas about other forms of communication and perhaps about mass media as well. (For imaginative studies of alternative media, see Brown, 1977; Kula, 1986; Saenger, 1982; Stout, 1986). Mass media history is conventionally thought to be an account of the social and political development of a narrow range of technological artifacts. But these artifacts have been conceptualized less by the consistency of certain technological properties (which are uninteresting alone, and have never been specified by an adequately formulated historical conception of communication), or even by social uses (mostly unknown, though often assumed), than by categories employed by mass media industries and institutions to describe commercial products. Long an uncontested ordering principle in communications history, this artifactual classification needs to be reconsidered, because artifactual conceptions of media history commit a synecdochical fallacy in which apparatus is taken to be the constitutive element in a larger communicative event of which it is only a part, and for many purposes not the main part.

It is taken for granted in contemporary studies of culture that the categories we use to index cultural constructions are themselves data for analysis. But for a number of reasons having to do with the origin of communication studies in professional journalism schools during the heyday of a particular fashion in historical theory, and with the institutional fortunes of communication history, its most familiar categories have rarely been interrogated on their own terms (Marvin, 1983). The notion that media artifacts are transparently identifiable, and that logical divisions of communication history relate to easily recognized stages in their development, persists. Few efforts have been made to examine the utility of these stages, or to explore alternative categories.

An important corollary of this black-box, or media-artifact, framework of media history is that it begins at the point where institutional organizations spring up around media artifacts, lending them social flesh to support the claim of their physical reality on theoretical imagination. Still another corollary is that, associated with each type of artifact, as apparently solid as Dr. Johnson's table, is a single, distinctive code. The notion that every medium emits its own signal essence was crystallized (though not invented) in Marshall McLuhan's most famous slogan. This idea has frequently exercised mass media audiences, who cast each new artifact from dime novel to computer as the embodiment of a unique and powerful code of messianic or demonic power. These assumptions are ahistorical. They appropriate categories of discourse from a contemporary world, categories that may not describe even it very well, and project them backward. To see media as clear and distinct objects spinning off new social groups called audiences, for example, distorts the circumstances in which new media have usually been developed and accommodated. New technologies come to existing groups less as transformative agents than as opportunities or threats to be weighed and figured

into the pursuit of ongoing social objectives—preserving class stability or moving upward socially, for example. They come as elements to be absorbed into existing rules and expectations about the structure of social relations. If we shift our conceptual emphasis in this way, we transfer the locus of communications phenomena from their artifacts to the groups talking around and through them, to whose array of communicative purposes particular artifacts may be relatively incidental.

If the focus of communication is defined as the expression of social relations, communication with new artifacts is the occasion for introducing new rules and procedures to express those relations—not only the relations among communicants but between communicants and the rest of the social world of interest to them. In this view, the society-that-exists when artifacts are introduced has more interest for the historian of new communications technology than the society-that-will-eventually-be, the latter beloved by those who believe the effect of new media on an “old” society is the emergence of a “new” one. The problem is not so much discerning the germ of a new society in an old one, a familiar allegory of collective redemption, but how habitual social intercourse is restructured in new media. When old rules of association are transferred directly from old modes to new, where different real and perceived social distances between groups obtain, underlying rules of communicative exchange are exposed as expressions of social relations and, in particular, of social location and distance. Often these rules are not explicitly articulated, and may run counter to whatever rules are.

This is an abbreviated summary of a reanalysis I have attempted of certain features of the early social history of electric media, especially the telegraph, telephone, and electric light. An account of the actual social relations conducted around them in the late nineteenth century is presented in the work itself. The purpose of this piece is to explain how I arrived at the framework I have described above, and what utility it has for investigating electric media history. In my case a convenient beginning was the research I did as a graduate assistant for Lord Asa Briggs, a pioneer in the social and cultural history of popular and working-class culture in Victorian Britain, and the author of the still standard history of the BBC (1961, 1965, 1970, 1979). My task was to examine nineteenth-century popular and engineering texts for clues as to how a variety of people thought wireless would fit into the world of the future. That work raised questions I pursued further in a doctoral dissertation that laid the ground for still more questions, and a book-length study titled, *When Old Technologies Were New: Thinking About Electric Communication in the Late Nineteenth Century* (Marvin, 1988).

The first thing I learned was that “wireless” had acquired conceptual edges only in the twentieth century. It did not appear as a stable descriptor attached to a reasonably constant physical or social image, an “artifact,” in the period I was studying. Indeed, most communications technologies developing in the nineteenth century were not well sorted out in public or expert imagination by shape or function. In a community where voice had been available only in the immediacy of speech, for example, the invention of two voice-carrying technologies like the

phonograph and the telephone was a minor miracle. Still, voice at a distance was unknown to social intercourse. As a result, the differences between how a phonograph and a telephone carried voice at a distance were not culturally salient until appealing purposes for which voices might be transmitted had been articulated. For us such differences are clearly marked as the distinction between, among other things, preserved and real-time speech; historically, such distinctions had to be established for some groups and elevated to collective consciousness over other possible differences among media. (Thomas Edison himself did not understand the "purpose" of the phonograph he invented, for example, conceiving it as a telephone answering machine on the model of a recording device he had developed for telegraph messages, until he demonstrated it to an audience that saw its purpose very differently; see Johnson, 1890.)

It was a key point not only that new media were not technically or socially configured in the nineteenth century as they are today, but that they often were not imaginatively distinct objects with consistently defined purposes. Given that a "history" of media implies a continuity that must be made theoretically explicit, this confusion called into question the very idea of an artifactual electric media history anchored in the nineteenth century and continuing into the twentieth. Given radical discontinuities between particular technological innovations and social notions of their existence and utility then and now, was it proper to speak of a continuous history of electric media back to the last quarter of the nineteenth century? When is a past communicative goal or practice close enough to a contemporary one to merit a claim of continuity, and when isn't it? At what point is a technically evolving machine a prototype of a contemporary machine, and at what point is it really a different machine? Perhaps to circumvent such issues, previous accounts had labeled this period as the prehistory of electronic mass media, conceptually acquiescing in its exclusion from authentic, consequential historical episodes in media history.

Because I was convinced of the artifactual illusion by my sources, I turned my attention to what social futures people expected from new media in all their shifting and multifaceted forms. I examined predictions about centralization (new technologies of communication would foster it; new technologies would inhibit it), crime (new media would cause crime, new media would prevent crime), family life (the same), and a variety of other things. I learned that experts don't predict the social future well, certainly no better than editors of popular magazines. I knew that media uses cannot be deduced from the physical characteristics of black boxes but must be recovered from evidence of evolving cultural constructions. Among the surprising things I knew was that in the nineteenth century many people believed that electric lights were the message media of the future in searchlights projected on the clouds, spelling out messages about war and weather, and in banks of lights flashing out messages on the sides of buildings (Marvin, 1986). I also knew that telephones had relayed concerts, sermons, speeches, plays, and so on to audiences long before the existence of broadcasting. I knew that media had been used to do things we had forgotten all about, more evidence against

a technological imperative that leads inevitably to some uses and not others, and in support of the notion that media use is socially assigned and constructed. In spite of a wealth of interesting detail and evidence to support a few surprising short-range generalizations, however, nothing connected these pieces to each other. I had not replaced an artifactual approach with any fruitful alternative. No allegorical register had emerged.

In the course of wrestling with this problem, I encountered a number of questions for which I had no satisfactory answers. One was put to me by Tom Guback, a member of my dissertation committee at the University of Illinois. He wondered why I had assigned the role of author of the material I had collected from technical journals to an abstraction called "public imagination." It was quite clear that engineering elites had assembled it, albeit from both the popular press and the various organs of expert opinion. I argued that popular and elite traditions were all mixed up together, and that it hardly mattered, because there was an overall consistency. This answer was wrong, because experts very carefully distinguished their own opinions from those of laypersons on some topics. As I was to discover, this was not random.

Another question arose at a seminar of historians to whom I presented my work at the University of Pennsylvania. One historian of science wondered if any of the fantasies or experiments I was describing had tangibly affected the physical configuration of the communications artifacts and networks or the organizational systems encompassing them. His question anchored media in the most traditional models of political and institutional history, and properly so, because I had offered no alternatives. In that model, media and other social phenomena achieve historical existence when institutions manifest around them. In that light, fanciful early reactions to new media seemed little more than the chaos of social experiment. Was there any evidence that what I was describing had shaped the main event, that is, the organization of broadcasting? I could point to only one example. I knew that the famous story of David Sarnoff's proposal of mass marketed radio music boxes to RCA executives exaggerated Sarnoff's originality. In fact, Sarnoff's "prediction" was descended from more than thirty years of popular and expert prophecies about the telephone and other telemedia. The future president of RCA may have performed a piece of legerdemain in estimating dollar sales to the public, but his vision of the future of radio was not a personal inspiration (Barnouw, 1966). This got me through the seminar, but it seemed a pale connection to any history that mattered.

Communications History as Mediated Social Distance

As long as I continued to conceive of the last quarter of the nineteenth century as a prelude to the main event, that is, as the prehistory of twentieth-century electric media, the importance of what I was studying was not clear. I continued to pore over documents of experiments and speculations directed to real and imagined

new media. The material that most interested me described confrontations on occasions when the usual clues of social transaction were made doubtful by new media. Many of these stories explored the trustworthiness of social exchanges through new media, demonstrated that experts with technical command of new media often used them to deceive the despised and unwary, and displayed the battle between the sexes on a new front.

I especially remember a story about a young woman working as a telegrapher in her father's store, who struck up a flirtation by wire with a married railroad telegrapher. Their relationship became a romantic liaison. When her enraged father threatened her with physical harm, she had him arrested on the spot ("The dangers of wired love," 1886). I liked this story for its sensational distrust of new media, its fears of women using technology, and other typical themes all neatly collected in one paragraph. None of them quite captured the story's focus, however. It finally occurred to me that this anecdote expressed the fear that new media would destroy the family group, and that a pervasive theme in my material was that of established social groups trying to make sense of how new ways of associating affected the stable social structures and amenities of life to which they were devoted.

Conceiving the material in this way meant that what had been disjunctively labeled the prehistory of media could now be seen as part of a continuous history of concern about the way in which new channels of communication imperil and rearrange social relationships, a concern as familiar as the debate about what television brings into our living rooms. This led to an analysis of the social "effects" of new media as follows: (1) New media change the real and perceived social distance between existing groups to make some groups more accessible, and some less so to still other groups. (2) New media change the cues, or authenticating fictions, by which groups estimate the trustworthiness of those with whom they have dealings, and around which they manage strategies of deception and face-saving that are equally vital to perceived social stability. The delicate web of social intercourse is always elaborated in the arrangement of communications channels. The stories I had collected were indices of maneuvering for social position as new media intruded on old social habits.

The social history of media was not, after all, indistinguishable from the rise of large institutional and industrial organizations of mass media. Instead of a technical prehistory of media separated from its "real" history by the organization of institutions, there was a visible and populated history of continuous concern about the effects of media on the family, about the displacement of valued mediated relationships by suspect ones, and about the social dimensions of the world presented through media—who was near, who was far, and who was related to whom in it—all observable long before the institutional incarnation of twentieth-century mass media.

Another implication concerned relevant actors in the history of electric media. In the usual account, actors were industry participants, political players in developing regulatory structures, or audience members, all new groups emerging out

of the black box, as it were, without reference to existing groups, and so confirming the hypothesis that the box was the source of historical activity. In this view, engineers and other technocrats were simply the advance team that assembled the black box and contributed in no other interesting way to its social development. From the new perspective, engineers and other "electricians," in the argot of the period, were the original social actors in electric media history, emerging from and defining themselves in relation to existing lay and professional groups, and using these technological artifacts as movable pieces to negotiate power, representation, knowledge, and authority. Historians have mostly portrayed engineers and "electricians" as technical executors without much investment in social struggles beyond those of their profession. While their professional identities were certainly crucial to their historical roles, these were not necessarily more important than their commitments as citizens to aspirations and goals only partly realized through professional activities. Men who were electricians were also fathers and husbands, members of a white middle and upper class, Americans and Britons, and so forth. Where these professional and personal commitments were at cross-purposes (and where they were not), the outlines of conflict appeared in bold relief around new media.

The public, for whom electricians claimed to act as agents, from whom they expected deference and respect, and who they nevertheless often regarded with contempt, were also key actors from the beginning. This public was already-in-place, rather than newly-formed-as-audience and lacking all connection to a past before electric media. The public-in-place was seen by electricians as a group to whom they must respond, and from whom they grudgingly solicited support. This identification of the relevant actors sorted out the cast of characters in my material. In much of it, members of an engineering and scientific elite spoke off-stage to one another but also observed and quoted a variety of laypersons with curiosity, interest, and disdain. They and the public they constructed were colorful protagonists in a drama of social classification. Experts appeared sympathetically in their own self-portraits as engaged professionals, as family members, and as representatives of socioeconomic elites, while nonexperts were shunted into slots that emphasized their social marginality. There they were identified as blacks, immigrants, indigenous peoples, and, in the overwhelmingly male world of the electrical expert, women.

I arrived more gradually at another conclusion, this one bearing on the assumption that each kind of black box exercises social influence through a singular code. Television is not just the name of a technology, in this view, but the name of a code as well. The notion of exclusive codes had been cast into doubt for me by the fact that few people in the late nineteenth century fixed the edges of any new black box at the same point, and by abundant evidence of different codes operating simultaneously in all new media. Rather than a single medium laying claim to a single code, media were stages on which a variety of codes played with, elaborated, and contradicted one another. The code that organized so much of the professional lives of electricians, the group most fascinated by electric

media, was based in literacy. Rules for creating, understanding, and using texts not only organized electricians' professional lives, but intruded into all manner of social uses of electric media as well. Codes of literacy, presumed to be irrelevant for the history of electric media, were central to them. Moreover, codes of literate authority were contrasted by both electrical experts and laypersons with popular codes of bodily authority, or immediate sense experience. Thus expertise and literacy were often conflated, and bodily immediacy and nonexpertise were closely associated, each constellation knowing the world in a different way. Experts were experts precisely because they had extensive, text-based knowledge of electricity. Publics comprised those who could not understand technical texts, and consulted the evidence of their senses to understand electricity.

By now, most familiar media models had disappeared. (This statement is never true, but it often seems so.) Neither the prehistory of broadcasting nor its technological history was a suitable frame for the material at hand. A more suitable frame was the history of deformations, and attempts to repair them, exerted by changes in communicative forms on the set of codes by which people place themselves in relation to one another. It included codes we no longer remember, and codes that extend back farther than we realize. It linked the electric-media-literate codes and sociogestural codes alike.

Theoretical Models

The explicit theoretical frameworks that most influenced me did not come directly from communications history. The first was Mary Douglas and Baron Isherwood's (1979) *The World of Goods*, which argues that supply-side theories of economic behavior, unable to account for demand, have incorrectly dismissed it as irrational and unsystematic. According to Douglas, goods are a symbolic register of status. Demand changes when group members seek advantage in a status hierarchy by acquiring and manipulating goods to which social meaning is attached. In this communication theory groups seek to reserve to themselves control over those who have status, either by creating social meanings in goods that other status-seekers will attempt to acquire, or by appropriating in consumption meanings that admired others display or conceal. (This requires assuming that people always seek more social advantage than they have, a way of saving economic man, so to speak, while dismissing him at the same time.) For Douglas, shifting monopolies of information embodied in fashionable commodities are a mechanism to create and maintain social distance, to define insiders and outsiders.

The importance of this model for me was what Douglas was able to say about communication without confining it to black boxes of the usual type. Hers was a suggestive demonstration of what could be done outside conventional notions of media institutions and messages. She illustrated her thesis by making the possession of a household telephone in Britain a social marker independent of messages received and transmitted by its means. The medium (what I am calling a black box to signify that we have assumed much and explored little) was a message different in kind from that implied in Marshall McLuhan's slogan.

I had also become persuaded by an imaginative body of research that effects models of literacy based in cognitive psychology sprang from a misleadingly narrow definition of literacy inherited from a post-Renaissance European upper class, adapted to the requirements of a white industrial elite in the twentieth century, and prescribed as universal as a condition of effective domination (Marvin, 1984). Sylvia Scribner and Michael Cole's (1979) study of contemporary Vai literacy in Liberia is convincing on this point. The history of literacy (and of literacy studies!) aptly demonstrates how dominant groups impose definitions of social reality on others, and how theoretical boundaries scholars had taken for granted as secure not only leaked badly, but obscured the phenomena of interest.

Another piece of the puzzle had been filled in by Elizabeth Eisenstein's (1979) work on the printing press. She was interested in the introduction of technology both for the changes it had wrought, and because the joints of society are most visible at the point where it takes on new technology. Eisenstein's account of the advent of printing in Europe confirms what seem to be two general principles of the introduction of important technologies: (1) New technologies are detailed to perform old tasks and solve old problems in the belief that social structure will stabilize as new technologies reproduce it more efficiently. (2) Implementing new technology never changes only one thing, but always introduces unanticipated elements that cause consequential social realignments.

Equally formative was Frances Yates (1966), whose *The Art of Memory* was my original introduction to unconventional topics in communication history. Yates not only took memory for her province and helped me realize how partial an account of communication history is reflected in our scholarly preoccupation with transmission relative to memory and retrieval, but demonstrated how different cultures at different times do different things with the same "technology." While there are links between them, each culture imprints itself uniquely on its communications practices.

This group of theorists gave me virtually all the pieces I needed to organize and interpret statements about accommodating new communications technology in the late nineteenth century. I still needed a final piece to knit it all together. That piece was provided by Brian Stock's (1983) work on the medieval accommodation between literate and oral modes in *The Implications of Literacy*. Stock's notion of textual communities and designated interpreters who define and negotiate the authority of the text has a widely applicable theoretical utility. Just as the text was not the source of historical action, but the excuse around which it was organized, the black boxes on which I focused were not the source of historical action, but similarly, its pretext. Along with Mary Douglas and Frances Yates, Stock shifted the locus of communication from the artifact to the group that used the artifact to construct and maintain itself.

From Stock, Douglas, Eisenstein, and Yates I learned to position the social history of media around the drama of social structure and process—who is inside, who is outside, who has authority and may be believed. They helped me identify the group that provided dynamic movement to electric communications history in the late nineteenth century, the experts who assembled the black boxes

and paid attention to them, and sought to anchor their own legitimacy in their activities around media. All of them encouraged me to think of communication as a set of contested codes negotiated among groups striving to represent themselves to one another and to themselves rather than springing *sui generis* out of the black box, like Athena from Zeus's head.

REFERENCES

- Barnouw, E. (1966). *A history of broadcasting in the United States: A tower in Babel* (Vol. 1). New York: Oxford University Press.
- Brown, L. (1949, 1977). *The story of maps*. New York: Dover.
- Briggs, A. (1961, 1965, 1970, 1979). *The history of broadcasting in the United Kingdom*. London: Oxford University Press.
- Clifford, J., & Marcus, G. E. (Eds.). (1986). *Writing culture: The poetics and politics of ethnography*. Berkeley: University of California Press.
- The dangers of wired love. (1886, Feb. 13). *Electrical World*, pp. 68-69.
- Douglas, M., & Isherwood, B. (1979). *The world of goods: Towards an anthropology of consumption*. New York: Basic Books.
- Eisenstein, E. (1979). *The printing press as an agent of change: Communications and cultural transformation in early modern Europe* (Vols. 1 and 2). New York: Cambridge University Press.
- Johnson, E. (1890, Feb. 22). The phonograph. *Electrical World*, pp. 136-137.
- Kula, W. (1986). *Measures and men* (R. Sztreter, Trans.). Princeton, NJ: Princeton University Press.
- Marvin, C. (1983). Space, time, and captive communications history. In M. Mander (Ed.), *Communications in transition*. New York: Praeger.
- Marvin, C. (1984). Constructed and reconstructed discourse: Inscription and talk in the history of literacy. *Communications Research*, 11, 563-694.
- Marvin, C. (1986). Dazzling the multitude: Imagining the electric light as a communications medium. In J. J. Corn (Ed.), *Imagining tomorrow: History, technology, and the American future*. Cambridge: MIT Press.
- Marvin, C. (1988). *When old technologies were new: Thinking about electronic communication in the late nineteenth century*. New York: Oxford University Press.
- Peters, J. D. (1986). Institutional sources of poverty in communications research. *Communications Research*, 13, 527-559.
- Saenger, P. (1982). Silent reading: Its impact on late medieval script and society. *Viator*, 13, 367-414.
- Scribner, S., & Cole, M. (1979). *The psychology of literacy*. Cambridge, MA: Harvard University Press.
- Stock, B. (1983). *The implications of literacy*. Princeton, NJ: Princeton University Press.
- Stout, H. S. (1986). *The New England soul: Preaching and religious culture in colonial New England*. New York: Oxford University Press.
- Yates, F. (1966). *The art of memory*. Chicago: University of Chicago Press.